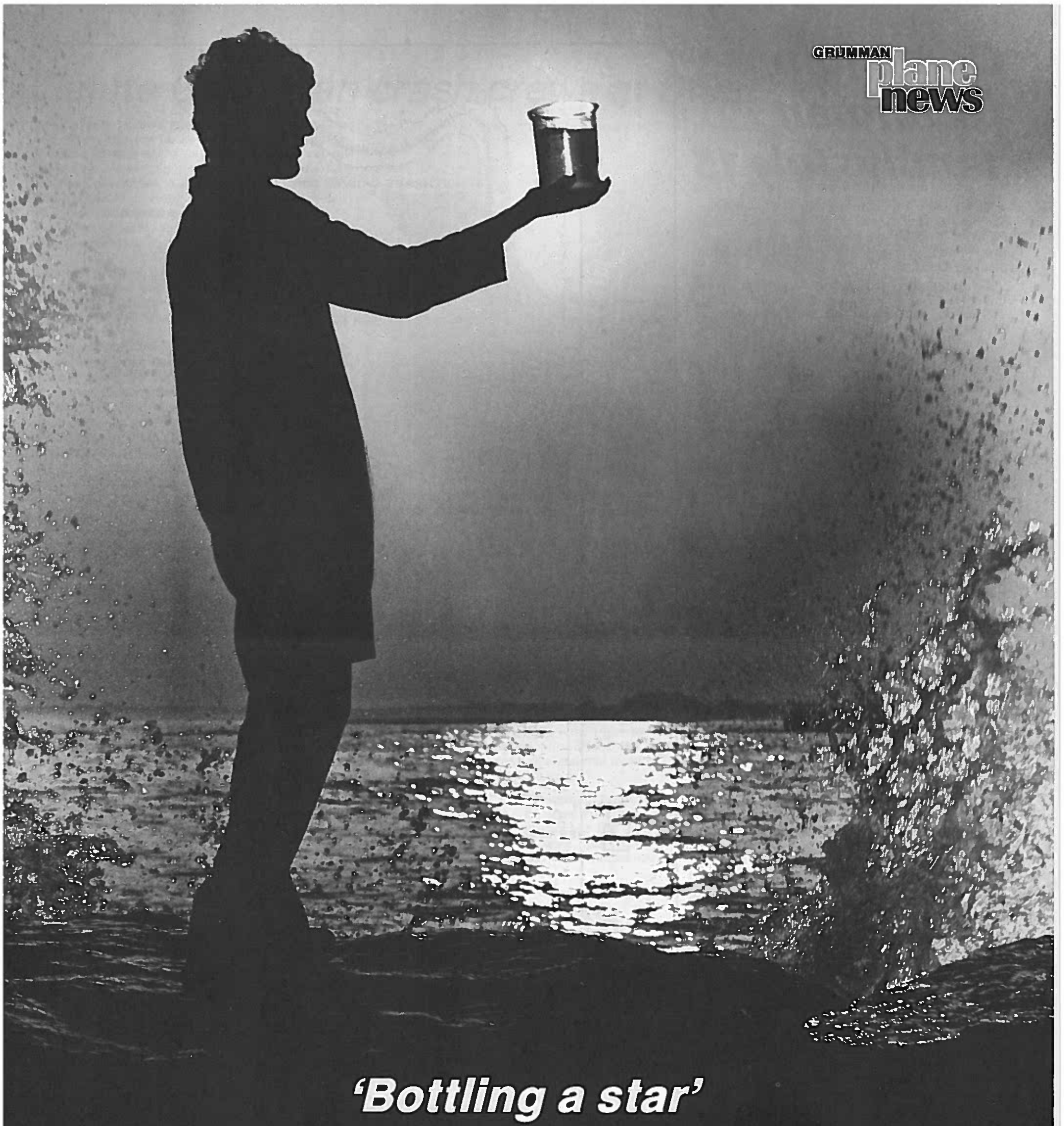
GRUMMAN plane news



'Bottling a star'

Around the world, scientists and engineers are joining forces to harness fusion energy — the energy process that our own Sun uses. The fuel: deuterium, an ingredient easily extracted from sea water.

Grumman Aerospace is assisting the U.S. Department of Energy in reaching its goal — to develop a fusion energy reactor that will commercially produce electricity by the end of this century. See article on page 6.

Come join Grumman family July 15

Today, July 14, is the last day that people can purchase tickets to the 37th Annual Grumman Family Picnic which takes place tomorrow — Saturday, July 15 — at the Calverton picnic grounds.

Grummanites and family members living under the same roof are invited to attend. Tickets are on sale at all Employee Services offices and they are still only $3.00 per person. Children under 12 will be admitted free. *No tickets will be sold at the gate.*

Food and beverages will be plentiful and a full schedule of games and entertainment is on tap. There will be dancing and yo-yo contests, softball and kiddie boxing. The picnic ground's rides will be in full swing as the Tilt-a-whirl, merry-go-round, caterpiller, boat rides, railroads and mini-ferris wheel will delight children of all ages.

It takes people

Hundreds of people are involved in the preparation of the picnic. Although the gates open at 8 a.m., it officially begins with the flag raising ceremonies at 10 a.m.

Following that ceremony, various sporting events and games, such as 30-yard potato sack races, wheelbarrow races, egg throwing contests and pick-up softball and basketball games, will test the athletic skills of young and old. You can dance too. The Grumman Employees band will furnish dance music from 10:30 a.m. to 2:00 p.m., take a short break, then play until 4:45. New this year, a yo-yo contest will commence at 12:00 p.m. and at 3:00 p.m.

At noon, there will be a five-act show, always a children's favorite, that includes magicians, clowns and animal acts.

And, of course, there will be a drawing of door prizes, starting about 2:30, that in past years has included such items as TV sets and large and small appliances. ES representatives will announce the lucky winners of over 100 prizes, so be sure to hold on to your ticket stubs.

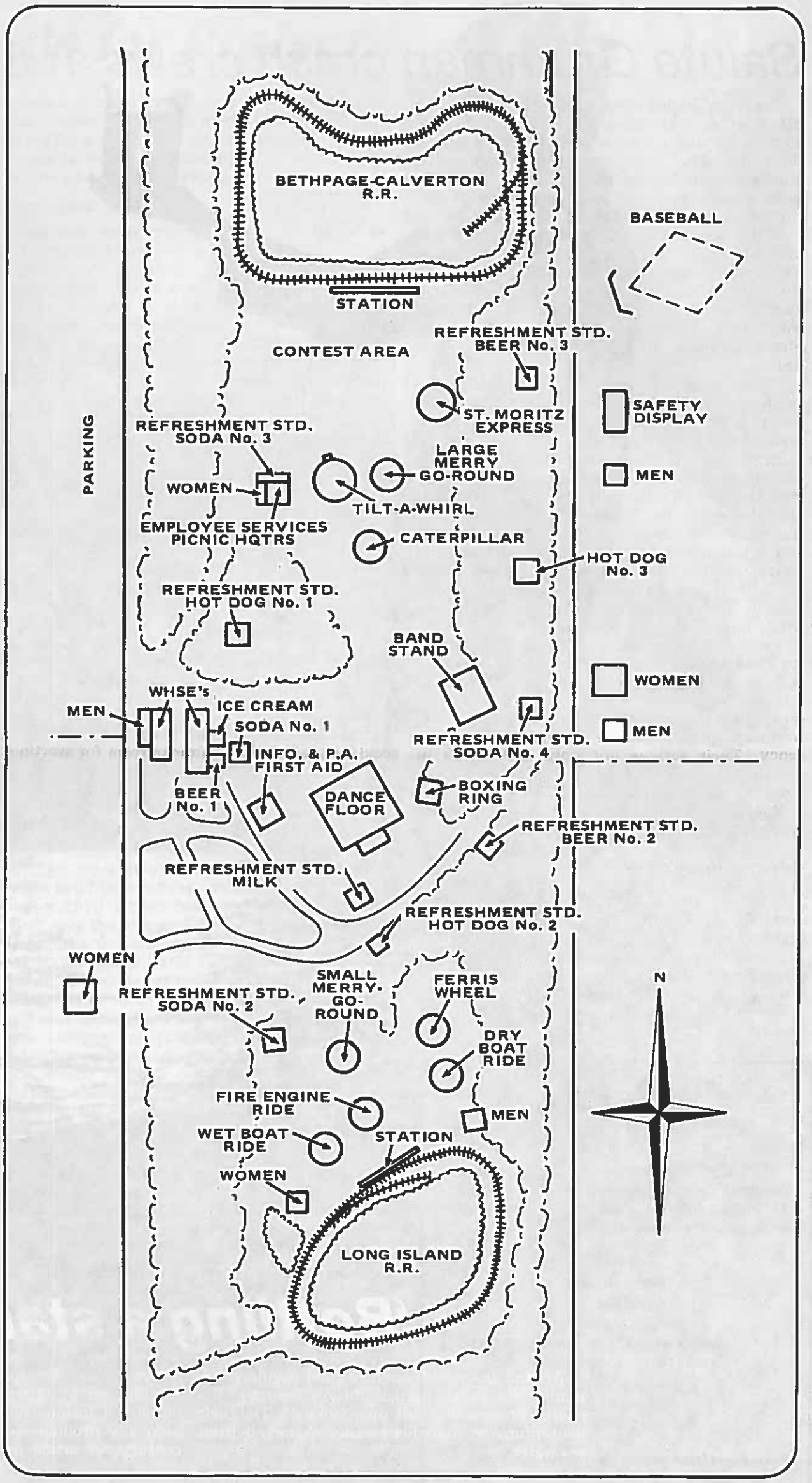
Directions to Calverton picnic grounds: Take Long Island Expressway to exit 69, Wading River Rd., head north to Route 25, turn right and follow the signs; or LIE to exit 68, William Floyd Pkwy., north to Route 25, turn right and follow the signs. From the east, you may prefer to go north on Edwards Avenue, Route 71 off the LIE. Route 71 goes directly to the facility, then follow the signs.

But if it rains

If it should rain on July 15, the picnic will be rescheduled for Sunday, July 16. If a postponement is necessary, it will be announced early Saturday morning over the following radio stations:

WBAB, Babylon (FM 102.3); WNYG, Babylon (1440 AM); WGBB, Freeport (1240 AM); WLIR, Garden City (FM 92.3); WHLI, Hempstead (1100 AM); WGSM, Huntington (740 AM); WLIX, Islip (540 AM); WALK, Patchogue (FM 97.5, AM 1370); WRIV, Riverhead (1390 AM); WLGN, Sag Harbor (1600 AM).

You can also find out about a postponement by calling LR 5-5111 in the Bethpage area, or 369-2266 in the Calverton area.



Vol. 37, No. 11, Bethpage, N.Y., July 14

Salute Grumman crash crews at Stuart, Calverton

The little single-engine airplane had just taken off from runway 2 at Witham Field, Stuart, Florida. It was a few minutes before noon on June 14. The plane, an Aero Commander, climbed evenly for the skies, slowly gaining altitude. Suddenly, it began to lose power — and the little plane plummetted to the ground.

Within seconds, the Grumman crash crew was on the scene. They pulled two men—James Twiss and Henry Moser—from the wreckage of the fallen plane, and put out a fire that had started in the engine compartment. Although they were knocked unconscious, Twiss and Moser survived the fall with only cuts and bruises.

"They were very lucky," said John Caserta, crash crew chief. Caserta responded to the emergency with two other crew members, Joseph Spataro and Larry Jackson.

But Twiss and Moser think it was a lot more than luck. In a letter to Stuart Operations general Manager, Vice President, Ed Dalva, Twiss and Moser cite the lightning quick response of the crash crew. By getting them out of the plane and extinguishing the fire, Twiss and Moser are convinced the crash crew saved their lives: ". . .had it not been for the actions of Mr. Caserta, Mr. Spataro, and Mr. Jackson, . . .we would have died in the airplane."

Twiss and Moser also had words of gratitude for Basil Chrysopalos and Wayne Moody of the flight control tower at Stuart. "When we had attained an altitude of 200 feet and our engine quit, they immediately cleared us to land and warned airport traffic of the impending emergency. Their actions not only assisted us in attempting a forced landing, but prevented other aircraft from becoming involved."

The crash was the first at Stuart Operations' Witham Field in almost 15 years.

Calverton to the rescue

Close to midnight on May 5, an accident occurred on County Road 111 and Sunrise Highway in Eastport.

The spillage from a gasoline tanker truck created a fire hazard which proved too large for local fire fighting units to handle alone.

One hour later, the Grumman Crash and Rescue Team, from Calverton, received a call from the Eastport Fire Department. Walter Alber, Philip Fenderson, Robert Fox and George Rose responded to the call.

Crash landing. *At Stuart Operations, the Grumman crash crew evacuated two passengers from this plane wreck.*

Police supervisors at the scene of the May 5th accident praised the Grumman team for averting near disaster. At the direction of Suffolk County police commissioner, Executive Officer J.F. Gallagher of the Fifth Precinct, Patchogue, commended the men for "a job well done." In a letter to Tom Merritt, Calverton Operations general manager, Gallagher wrote: "I would like to take this opportunity to personally thank the men involved for the efficient, professional manner in which they handled this situation."

The members of the Grumman crash crew attribute their success to teamwork and the availability of highly sophisticated fire fighting equipment. The crew operates one Grumman foam, or crash, truck and one smaller quick response truck. The former carries a substance called aqueous film forming foam. The foam's gel-like consistency enables it to rest on top of fuel and does not allow it to vaporize. Gas spillages, controlled by the foam, cannot burn.

Local fire fighting units carry, on the average, approximately 20 gallons of foam at one time in addition to 1,000 gallons of water. The Grumman crash crew mans a truck that can carry up to 500 gallons of foam and 2,500 gallons of water.

George Rose of the Calverton team says there are "no heroes" among the members of the Grumman Crash Crew. "Our job," he says simply, "is to respond to emergency situations as a team. We help out wherever we can." During the past three months, the crew has responded to three other similar emergency situations.

GRUMMAN plane news

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retirees

On behalf of their fellow workers, PLANE NEWS salutes the following men and women for their contributions to the company and wishes them well in their retirement. Those who retire in July are:

George Simpson (66), Mieczyslaw Szymanski (7), William Wagner (2), Rudolph Lemp (37), Victor Bollo (2), William Wudte (1), Frank Brown (1), Joseph De Marco (1), Joseph Kuster (2), Robert Messler (3), John Clifford (6), Edith Kerbs (5), Richard Stevens (3), Joseph Donato (1), Erik Abrahamson (1), Frank Brauneisen (5), Edward Calvelli (10), Francis Doddato (6), Seldon Elliott (7), Edward Franchi (2), Byron Howard (2), Joseph Kubik (3), Thomas Manetta (1), Timothy Murphy (30), William Murray (80), Ann Panzera (2), George Panzera (2), Anna Pearsall (35), Chester Shilstone (2), Paul Sampson (2), John Schlossmacher (2), Edward Weick (30), Edward Gillespie (6), Jacob Scheiner (6), Ralph Leyrer (2), Helen Kowalski (44), George Rueth (60), Frank Caracci (77), Vincent Quinn (77), Ludwig Specht (77), Joseph Spindler (77), Ira Schottland (30).

Well done!

Vice Adm. Forrest Petersen, commander of Naval Air Systems Command, recently commended the E-2C community for its efforts in bringing the Hawkeye to an all-time high rating in Operational Readiness — 77.7 percent in April.

"An accomplishment of this magnitude on a weapon system as complex as the E-2C can be justifiably viewed with pride and gratification by the E-2C community," said Adm. Petersen.

Added Tom Guarino, Vice President-Corporate Program Management: "The Grumman E-2C Field teams coupled with support from all departments in Bethpage contributed significantly in this overall achievement. Congratulations on a job well done!"

Canadian update

A few weeks ago, Premier Gerald Ryan of Nova Scotia assisted Grumman Corporation in unveiling its business opportunities van. The van will be used to exhibit Grumman's industrial benefits program — part of its F-14 Canadian proposal. The Grumman F-14 is one of six contenders for Canada's New Fighter Aircraft (NFA) which will be in service in the 1980's and beyond.

As part of its industrial benefits program, Grumman recently announced in Vancouver that it has agreed to take a $250,000 equity stake in Trident Aircraft Ltd. of Sidney, British Columbia. Grumman will assist Trident in building a single engine amphibian called Trigull. In addition, Grumman has offered the Canadian aircraft company technical and marketing assistance.

Trident Aircraft has put nine years into the Trigull floatplane which is designed as a general purpose aircraft which is also suitable for coastal patrol work and air ambulance duty.

Parting shot. *Before heading home, the F-14 Modification team lines up in front of the last delivery, aircraft H-9, in Tehran, Iran.*

F-14 mod team completes mission in Iran

The Grumman F-14 modification team is back home in the States. During the past nine months in Tehran, Iran, they have been modifying the first 20 F-14's that Grumman delivered to the Imperial Iranian Air Force (IIAF). Modification work entailed incorporating configuration changes that are included in the latest Tomcats coming off the final assembly production line at Calverton.

To cap off their stay, the Grummanites delivered the last modified Tomcat to the IIAF one day ahead of schedule. Their performance in Iran has not gone unnoticed.

Lt. General Yazdanbakhsh, Deputy Commander for Logistics for the IIAF, sent a letter of commendation to Grumman Aerospace Chairman and President George Skurla, praising the F-14 MOD team for their ". . .personal knowledge, experience, and total dedication."

Skurla noted Yazdanbakhsh's comments with "great pleasure. . . The outstanding performance of these Grummanites is a big plus in our growing relationship with the IIAF."

Bill Lamberta, the Survivability and Vulnerability (S/V) Modification manager, cited the team's "can do" attitude, and their ability to adapt to new surroundings in a short period of time. "All the guys were on short-term assignments," says Lamberta, "but four months is a long time to be away from your family. They were tremendously cooperative and really did a terrific job. From every point of view, this was a successful venture for Grumman."

Support from home

Stateside, the group received support from CONUS (Continental United States Support for Iran), which supplied everything for the project from personnel to supplies. Tom Gillen, CONUS manager, attributes the success of the F-14 Mod program to both good planning and communication.

"For the duration of the program, Bill and I had almost daily communication, either by telephone or by Telex. As soon as they came up with a problem — supplies, equipment, anything — we were able to get on it right away and get back to them with the answer." says Gillen.

Adds Lamberta, "There were over 160 people involved in the project. . .they've got every reason to be proud of a job well done."

C-2 gets new lease on life

Several Grumman C-2A Greyhounds are getting a new lease on life through the Navy's Service Life Extension Program (SLEP).

The Naval Air Rework Facility (NARF) in North Island, California, will be pumping seven to 10 years of additional life expectancy into the 12 C-2A's which remain of the 19 Grumman built for the Navy between 1965-1968.

The Greyhound, a carrier-onboard-delivery (COD) aircraft, is a familiar sight on carriers all around the world. With a capacity for 28 passengers and five tons of cargo, the Greyhound is the main logistic air link between the seaborne fleet and land bases. It is a close relative of the E-2C Hawkeye, using basically the same airframe and propulsion system, but without the Hawkeye's radar dish and specialized electronics.

The SLEP refurbishment consists of replacing all electrical wiring and connectors, overhauling the engines, replacing all engine and flight control cables, hoses, tubing, and other changes as necessary. New red and white strobe lights will replace the red incandescent anti-collision lights; updated navigation systems will be installed; and the wing center sections will be removed and rebuilt. Finally, each aircraft will be given a fresh coat of paint.

In December 1977, the aging Greyhounds began reaching the limits of their projected service life. It has been estimated that it would cost the Navy approximately $7.5-million to build a replacement for each C-2A; however, recycling them through SLEP costs only $1 million per aircraft. The first revamped Greyhound rolled off the SLEP line on April 14; more will follow at the rate of two per year.

Procedures

The following Corporate Procedures and Directives were published during the month of June. Copies can be obtained by calling Ext. 8827.

A2010 R.5 — GAC SERVICES TO AFFILIATES. . . Charging and Business Practices for.

A2047 — COLLEGE/INDUSTRY COURSES AND SEMINARS. . .Application and Processing for.

D201 — ENGINEERING DOCUMENTATION AND DRAWING SYSTEM PROCEDURAL OVERVIEW.

D301 — TECHNICAL REVIEWS (including Design Reviews). . .Procedure for.

P102 — SPECIAL TEST EQUIPMENT. . .Acquisition of.

P107 R.2 — SPECIAL FLIGHT TEST INSTRUMENTATION POOL (SFTIP) INSTRUMENTATION. . .Acquisition of.

P707 R.A. — SPECIAL FLIGHT TEST INSTRUMENTATION POOL (SFTIP) INSTRUMENTATION. . . Management and Control of.

people

With 320 friends urging him on, Tom Keegan went for a long walk recently. Five hours and 20 miles later, Tom was Grumman's grand prize winner in the 1978 March of Dimes Superwalk, held on Sunday, April 21.

Most of Tom's 320 supporters knew him from his post in the Plant 30 Employee Ser-

Tom Keegan

vice office. They had pledged varying amounts, from a nickel to a dollar, for every mile of the 20-mile stretch that he completed. By going the full route, Tom collected $810 for the March of Dimes — and won a Grumman canoe for his efforts.

Tom, who recently was transferred to the Plant 2 ESO, suffered no ill effects from his stroll. "My legs were a little sore by the time I finished, but otherwise I felt great," he says. "I had walked 16 miles the day before, and a lot of that was up and down hills. So doing 20 miles on a relatively flat stretch wasn't too bad."

Thousands of Long Islanders — independent strollers and people from other companies, clubs, and schools — made the trek from Eisenhower Park in East Meadow to the Grumman complex in Bethpage and back again.

The other winners from the Grumman contingent were: Eleanor Rice, Pl. 1 and Mary Bokrash, Pl. 35, who both won $100 U.S. Savings Bonds; and Jo Ann Cipriano, Pl. 35; Sandra Palladina, Pl. 35; Barbara Schaefer, Pl. 2; Judith Hogan, Pl. 30, and Meta Henderson, Pl. 2, who all won $50 U.S. Savings Bonds. Those who won sets of Grumman glasses were: William Oechsler, Pl. 43; Joe Gregg, Pl. 2; A. Louis Raspe, Pl. 56; Denise Torrisi, Pl. 2; Robert Barth, Pl. 2; Clarence Crosby, Jr., Pl. 40; Bob Schiffer, Pl. 111; Bob Gorman, Pl. 5; Edgar Stricklin, Pl. 56; and Arthur Grill, Pl. 40.

The prizes, donated by Grumman Corporation, were awarded to those who raised the most money for the March of Dimes, based on their number of sponsors and distance walked. All tolled, the be-sneakered Grummanites raised $4,500.

Flying high

Prior to a scheduled classic-plane flyby around Manhattan Island on July 4, Arthur Godfrey paid a visit to Grumman's Bethpage facilities. Godfrey, a pilot and friend of aviation for more than fifty years, was to have flown the lead plane, a 1944 amphibian Grumman Widgeon, in the flyby of 75 vintage planes. But the flight was cancelled because of poor visibility.

Mike Pelehach, Senior Vice President-Business Development, escorted the radio and television entertainer through some of the Bethpage facilities.

Godfrey is no stranger to Grumman planes having frequently flown a Mallard during the Forties and Fifties. "Beautiful planes," he remarked when shown models of several new amphibian designs, "just beautiful."

John Pereira of Business Analysis who was co-chairman for the classic flyby said "there might be an effort to schedule a similar flyby to mark the 50th anniversary of Newark International Airport next October."

New assignments

Among those who recently received changes in assignments were: CORPORATE QUALITY AND SAFETY OPERATIONS — John Jones, manager, A-6 Quality Program; and Louis Veprek, supervisor, Quality Engineering; DEPARTMENTAL OPERATIONS — Barbara Arp, section head, ILS Secretarial Services; Ronald Burk, project manager, Equipment Technology EA-6B; Dennis McRedmond, project engineer, G-III Program; and Nicholas S. Sinder, director, M-161 Hydrofoil Program; GREAT RIVER OPERATIONS — Thomas Halek, supervisor, Avionics Subcontracts; PROGRAM MANAGEMENT — Thomas Doyle, program manager, CH-53E Helicopter subcontract.

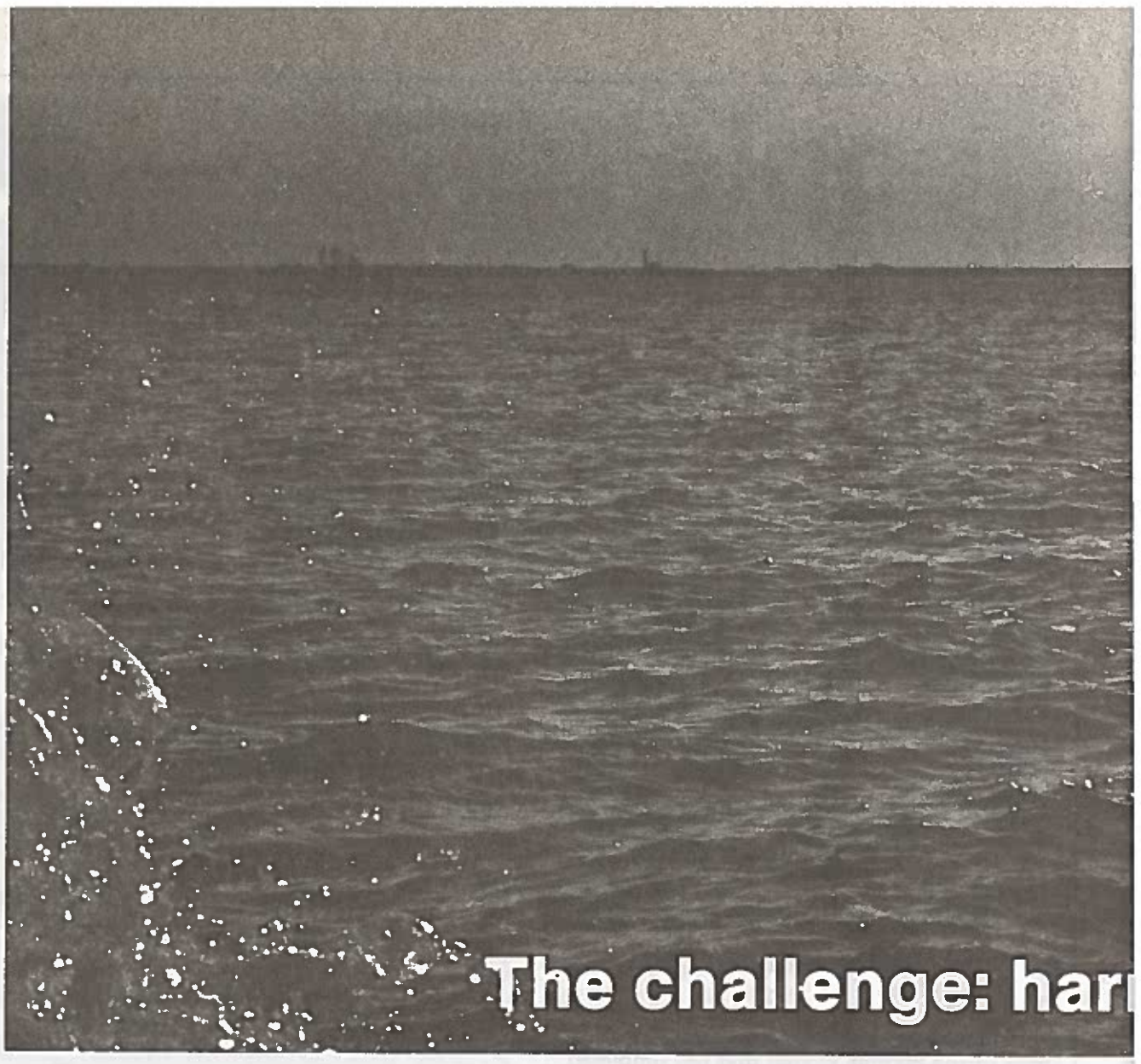
Still flying. *Arthur Godfrey enjoys a display of Grumman plane models with Senior Vice President Mike Pelehach (R). (Photo by Rich Breunig)*

Congratulations, Pt. Mugu grads!

More than 25 Grummanites at Pt. Mugu Operations recently graduated from the company's Management Training Program. At the last session, George Newman, deputy director of Pt. Mugu Operations, congratulated the graduates on their performance and presented certificates to all the participants.

Graduates pictured above are (L to R): Joe Green, Carl Butler, Jim Ashman, Don Johnson, Norm Swagler, Denis Sullivan, Carl Eng, Ed Johnson, Bill Patton, discussion leader George Ballard, Newman, John Jeppesen, Bill McClain, Luis Gonzalez, and Joe Rivera.

Fellow participants shown below are (L to R): Maury Owens, Ivar Ringdahl, Joe Russo, Don Frey, Leroy Kullman, Jerry Bocek, Warren Hlinka, Bob Nastali, Fred Artus, Ann Gross, Frank Palermo, Newman, Delford Neal, Ballard, Don Aoki, and Ken Kettenacker. (Photos by Don Olson)



The story goes that George Washington Hill, a turn of the century advertising genius, charged the then fledgling Coca Cola Company $25,000 for two words of advice: "Bottle it." Half a century later, a group of first generation nuclear scientists pondered over the ingredients in a vial of sea water and came to the same conclusion — "Bottle it."

For the past 27 years, thousands of scientists have been trying to "bottle a star" by creating fusion energy — the same process by which our own sun operates — right here on earth.

Come a long way

Since nuclear fusion was first used in 1951, the United States has spent close to one billion dollars on plasma physics and the controlled release of thermonuclear fusion energy.

Today, the U.S. Department of Energy's (DOE) goal is to demonstrate by the end of this century that a practical fusion power reactor can generate electricity. To meet this objective would be "the most exciting technological breakthrough in the history of mankind," says Ed Kintner, director of DOE's Fusion Energy Office.

"To develop a commercial fusion reactor in the shortest possible time, the skills in systems integration and technical innovation that characterize the aerospace industry are essential for success," states Kintner.

In February 1976, Grumman Aerospace entered the field of fusion energy as a key member of an industrial team. Headed by Ebasco Services, Inc., the team is assisting in the design and assembly of a Tokamak Fusion Test Reactor (TFTR) at Princeton Plasma Physics Laboratory in New Jersey. Kintner views this team contract as "a major step in line with our emphasis on getting more industry participation in our magnetic fusion program."

Now, two years later, Grumman people can be found at four major centers for energy: Princeton Plasma Physics Laboratory (PPPL); Oak Ridge National Laboratory (ORNL), Tennessee; Lawrence Livermore Laboratory in California; and Los Alamos, New Mexico.

As an energy source, fusion would utilize a virtually inexhaustible supply of fuel to produce electrical power on earth. It will be safe and non-pollutant and its primary fuel, deuterium, is easily extracted from sea water, says Kintner. Fusion is quite different from fission — the reaction used in conventional atomic plants. Fission involves the splitting of a heavy atom (uranium) by an energetic particle (a neutron) producing lighter atoms and a release of energy. Fusion causes light atoms such as those found in hydrogen to join (fuse) and release a huge amount of energy.

Ed Kintner
Director, Fusion Energy Office
U.S. Department of Energy

The most readily attainable fusion process on earth is the combination of deuterium nuclei with one of tritium. "The energy that could be produced by deuterium found in one gallon of sea water," says John Coursen, Grumman's director of Fusion Projects, "is about the same as that obtained by burning 300 gallons of gasoline. And it only costs about four cents to extract deuterium from sea water. Unlike fossil fuel which is limited in supply, there is enough deuterium in the oceans to fuel reactors for more than a billion years."

Heating up

But the task of harnessing fusion energy is a challenging one. The fusion of the deuterium and tritium nuclei releases tremendous amounts of energy, but the process requires temperatures of 100-million degrees Celsius (180-million degrees Fahrenheit).

On the sun, fusion is constantly occurring even though its interior is only 30-million °F. The sun's great mass (320,000 times larger than earth) provides the gravity needed to constrain the fusion process. Every second, the sun converts some 616-million tons of hydrogen into 612-million tons of helium. This thermonuclear reaction provides the tremendous amount of energy that the sun sends into space in the form of electromagnetic radiation. Because the sun is so hot, it is a gaseous rather than a solid body. Actually, the sun is made up of plasma, the fourth state of matter. And plasma's unique properties represent the key to magnetic fusion energy.

Scientists are now developing several methods and techniques to reproduce the conditions found on the sun in order to duplicate the fusion process here on earth.

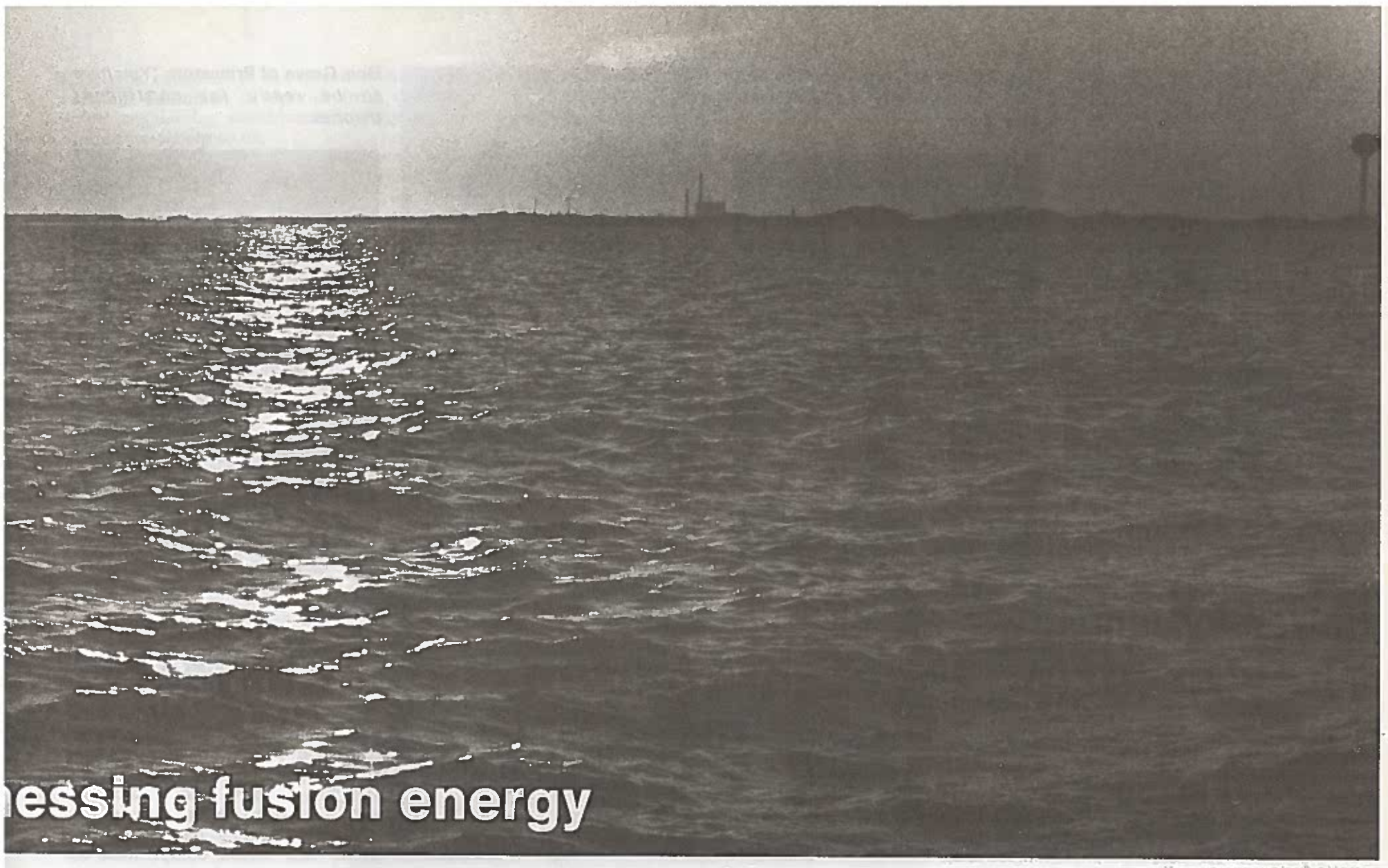
Experimental machines are being designed and built which use large magnets to force the atomic nuclei (plasma) together. Other devices focus laser beams on small amounts of atomic matter to create similar conditions. Several additional methods of raising the plasma temperature are being explored. Some of these involve conventional ohmic or radio frequency heating techniques. Others are more exotic and involve shooting streams of uncharged atomic particles into the plasma (neutral beam injectors) to raise the temperature to the desired level.

Two bottles

One magnetic approach uses doughnut-shaped containers (Tokamaks) with strong magnetic fields to control and stabilize the plasma.

Under a Department of Energy subcontract, Grumman Aerospace is helping to build the Tokamak Fusion Test Reactor (TFTR). This TFTR is the nation's largest experimental device and will be the first magnetic fusion system in this country to produce fusion energy in any significant quantity, says Kintner.

Princeton's TFTR provides an essential link between the scientific machines currently in use or under construction and the first experimental fusion power reactor which may be operational by the early 1990's. The $231-million TFTR is



...essing fusion energy

scheduled for completion in early-1982.

Members of the Grumman team located at Princeton have concentrated their efforts on the design and development of the major structural and electrical systems for the Tokamak.

Meanwhile at Bethpage, other engineers are engaged in additional development activities which include materials research, development of remote handling techniques and equipment leak detection systems and the design and fabrication of Tokamak system mock-ups.

In addition to the mainline Princeton TFTR activities, Grumman engineers are working with the Department of Energy on a variety of fusion energy design and development programs at other national laboratories across the country. These include:

- Early system studies of advanced machines to follow TFTR which are aimed at a demonstration of the ignition of deuterium tritium;
- Studies of advanced fusion devices and the development of superconducting coils at the Oak Ridge National Laboratory; and
- Development of a Tritium System Test Assembly which will demonstrate the handling of this radioactive material in simulated fusion reactor conditions at Los Alamos.

On the local scene

Locally, Grumman is working with Brookhaven National Labs on a new superconducting magnet concept known as DEALS (Demountable Externally Anchored Low Stress Magnet System). The DEALS magnet system is a design concept in which coil segments can be fabricated at a central facility and shipped to a reactor site using existing transportation systems and equipment. This eliminates the costly and difficult on-site coil winding process and simplifies replacement of a malfunctioning coil segment.

The way to go

The Department of Energy estimates a total expenditure of $16-billion to perfect, demonstrate and put to use a practical fusion reactor that can be licensed and sold to utilities by the year 2000. That is a relatively small figure when you consider that the U.S. spends approximately $38-billion annually for foreign oil.

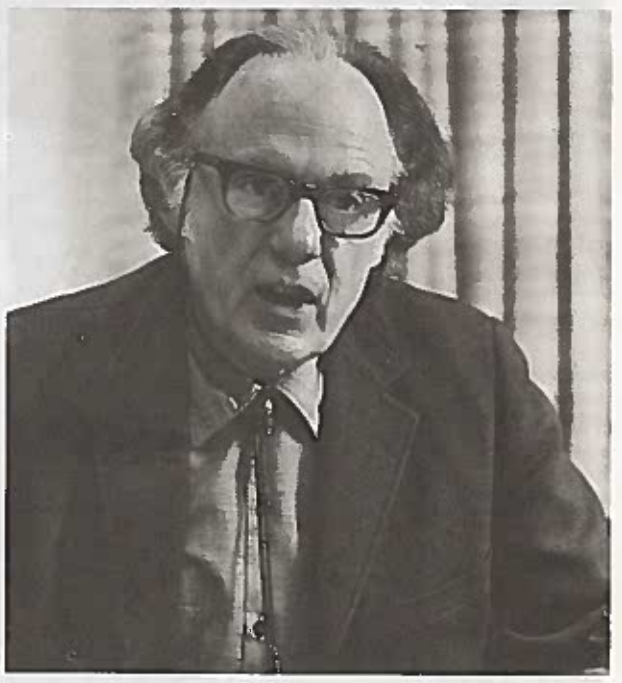
Kintner believes strongly that the world's economic progress rests heavily on harnessing fusion energy. "Nature started storing our fossil fuels hundreds-of-millions of years ago," says Kintner. "As we use up virtually all of the earth's supply in the next 50 years we must turn to new sources of energy. We could use fission energy but the radioactive dangers inherent in fission make it much more palatable to harness fusion energy which would be more safe and inexhaustible."

International exchange

The production of electricity by nuclear fusion is perhaps the most sought-after of peaceful international goals, states Kintner. "Ever since the United States and Russia agreed in 1973 to a Joint Commission on Nuclear Research and Development, both countries have been cooperating closely and fruitfully in these developments.

"Last year American fusion scientists and technologists spent 257 man-weeks in Russia; their experts spent an equal amount of time in our laboratories," continued Kintner.

Concludes Kintner: "I derive great satisfaction and hope from the world-wide agreement among scientists that nuclear fusion energy will be important in the world's energy future and that nations should continue to work together to demonstrate its practicality as soon as possible. It isn't just the U.S. that needs this new energy source — it's all mankind."



Dr. Melvin Gottlieb
Director, Princeton Plasma Physics Laboratory

Ken Wakefield of Princeton: *'. . .a fine marriage of university and industry.'*

Bob Papsco of Grumman: *'Working with the University is a new experience for us. . .'*

Oren Foust of Ebasco: *'We found Grumman's high technology areas complemented our own.'*

Don Grove of Princeton: *'You have to be ready for contingent theories. . .'*

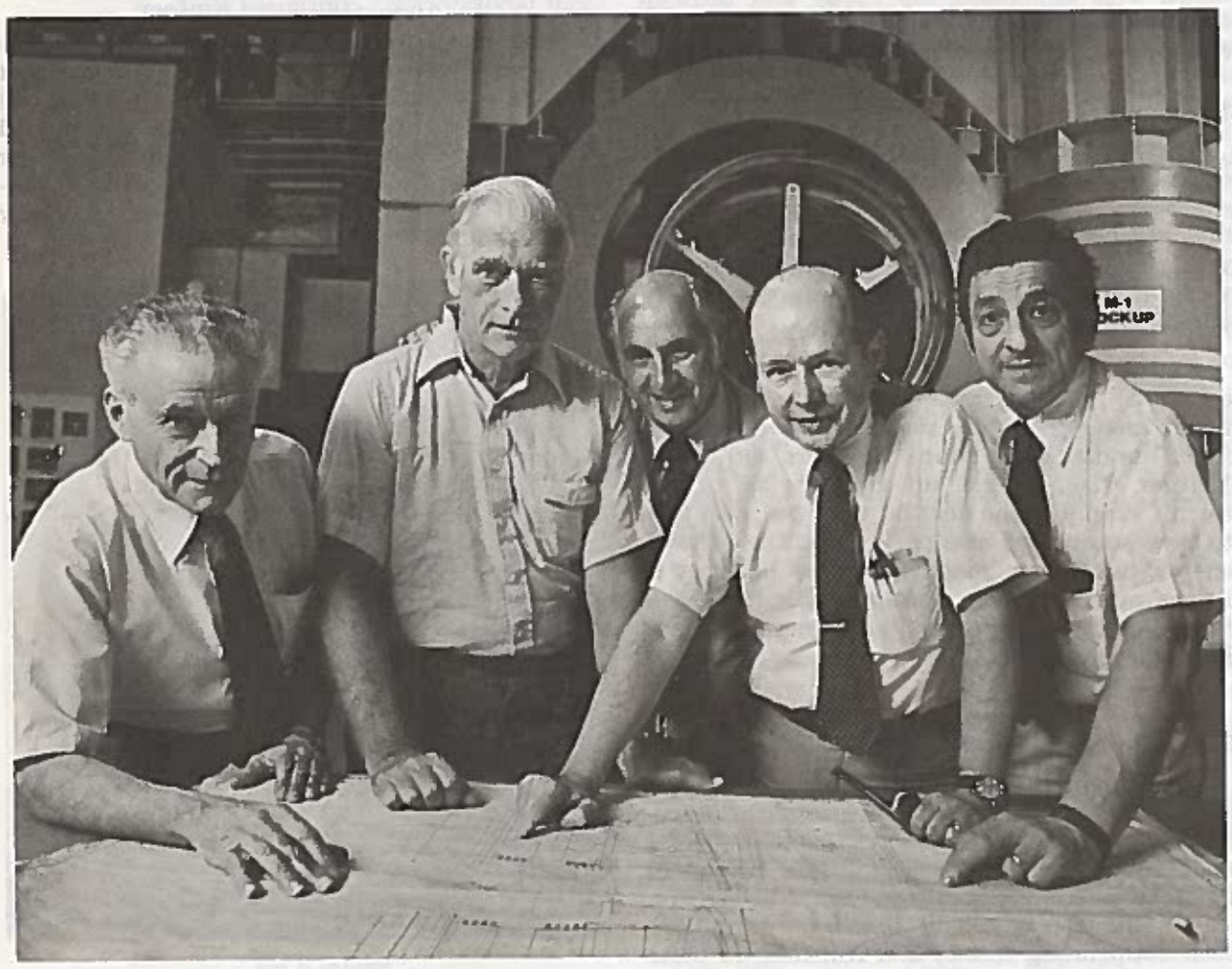
University, industry

They're fusing together to form energetic team

"With three organizations working on the Tokamak, there could have been a serious problem with communication," says Ken Wakefield, Princeton Plasma Physics Laboratory's (PPPL) chief engineer. "Fortunately, communication works pretty well between Ebasco, Grumman and us. We consider each industrial member as a company with a mission. As long as we pay attention to that mission in our day-to-day relationships, we will have a fine marriage of university and industry."

Fine marriage or shotgun wedding. The prime factor in this union between the three organizations is their compatibility with each other. Ebasco, the major contractor on the Tokamak Fusion Test Reactor (TFTR), has been building power plants for over 75 years. "Our task," says Oren Foust, Ebasco's project manager, "is to do the engineering, development, installation assembly and start-up and the testing of the major systems of the Tokamak."

"This is our first venture with Grumman," adds Foust. "We leaned toward Grumman because we found that they had some high technology areas that would complement us. For example, high vacuum technology, diagnostics, complex instrumentation and control, systems analysis and overall research and development."



From space to fusion. *Prior to the Tokamak project Grumman engineers (L to R) George Pinter, Harry Hanson, Fusion Projects Director John Coursen, Gray Smith and Hal Wexler, all worked on various aspects of the space program. (Photos by Rich Breunig)*

Compatible arrangement

The mix of Grumman and Ebasco personnel works well. In some instances, the manager of a particular group might be an Ebasco or Grumman person, depending on that individual's expertise. "The team concept has worked very effectively, mainly because our corporate objectives are so compatible," says Foust.

Bob Papsco, Grumman project manager, TFTR at Princeton, says, "Working with university people is a new experience. They don't do things so much by the numbers here. They are pretty informal in the way they work, but just as rigorous in their efforts as anyone I've seen."

"Once you get totally into the hardware, Princeton will get out of the business," says Don Grove, deputy project manager on the TFTR for Princeton. "But that is going to take quite a while. We still have the problem of heating and constraining the plasma for at least one second at temperatures in excess of 100-million degrees F. We are closing in on that. However when we achieve this milestone, will Mother Nature change the ground rules. If she does, we have to be ready for it, and Ebasco and Grumman must be involved in these contingency plans. After all, they have to adapt the hardware to fit Mother Nature's requirements, whatever they may be."

Strong bond

Dr. Melvin Gottlieb, director of PPPL, says, "Princeton knows what has to be done; Ebasco and Grumman know how to do it. That is a very strong combination. Lots of engineering problems arise when you try to build big 'gadgets.'

Ebasco is excellent in the electrical engineering end and Grumman is superior from the mechanical engineering standpoint. So they both are of enormous help to us.

"Eventually, all of this fusion energy expertise will be in handbooks. But somebody has to write these handbooks and they are the people of Princeton, Ebasco and Grumman who are developing the techniques and designing the machines that will harness fusion energy."

The skills that Grumman engineers brought to the space program are now being applied to fusion energy. John Coursen, Harry Hansen, Gray Smith and George Pinter all worked on the Lunar Module while Hal Wexler was heavily involved in the Orbiting Astronomical Observatory (OAO). They all have virtually the same thoughts on fusion energy:

"I thought when I was working on the LM, that it was the pinnacle of my career; that nothing would ever come close to that project. Yet this is so much bigger. . ."

'Boggles the mind'

"The sheer size of the TFTR boggles the mind in terms of size, load and weight."

"This is the first step, and there are tremendous consequences that are going to have a real impact on the future of earth. It is the most important thing I'll ever work on."

Ed Kintner, director of the U.S. Department of Energy's Office of Fusion Energy, agrees with Grumman's engineers when he says, "Grumman is taking part in an historic event which many years in the future will be looked upon as even a greater milestone than the landing of a man on the moon."

Building a vacuum. *Princeton's Ken Wakefield (L) discusses magnetic coils of the Tokamak with Grumman engineer Gray Smith. (Photos by Rich Breunig)*

The way to go

While U.S. government-industry teams attempt to duplicate the sun's energy process on earth, fission energy is currently being employed in atomic reactors across the United States. But, fusion energy is by far the best energy alternative, says Ed Kintner, director of the Fusion Energy Office of the U.S. Department of Energy.

In comparing the total relative biological hazard potential of nuclear fusion energy with that of fission, Kintner states that fusion is at least 100 times safer:

- Fusion leaves none of the more dangerous kinds of fission products, such as iodine, cesium and strontium. No plutonium is generated unless the reactor is designed with a blanket for breeding fissile fuel.
- Depending on the materials used, total radioactivity is from a hundredth to a thousandth of that of fission.
- Total biological hazard ratios are far lower.
- There is no combustion waste.
- Accident potential is less. Instead of chain-reaction runaway or emergency cooling problems, the physics of fusion automatically and naturally shuts down the reactor in the event of mishap.
- Large, uncontrolled release of fusion energy is impossible because of such small amounts of deuterium and tritium in the fusion reactor zones.

In addition to greater safety and environmental compatibility, fusion has a number of other major advantages over fission, states Kintner:

- Fusion fuel is more abundant — the oceans contain more than 10 million tons of deuterium, enough to last millions of years.
- Tritium is readily made by bombarding lithium with neutrons released in deuterium-tritium reactions, and we have enough lithium reserves for thousands of years.
- Because of the lack of hazard and environmental problems, fusion electric power plants could be conveniently located to serve urban areas.

"When you consider that many people judge fission reactors radiologically acceptable," says Kintner, "fusion comes out not only much safer but also environmentally cleaner than fissile and fossil fuels. As for their economics, we believe fusion reactors will produce electricity for about the same cost as other advanced energy technologies . . .But we will have to do much more work before we can prove this. . ."

calendar

Aikido Club: every Mon. and Wed., 5 p.m., Pl. 35 cafe; for sport and self-defense; L.I. Aikido Federation; all guests welcome. B. Bauman, x2910/M. Stock, x7186.

Alcoholics Anonymous: every Mon., 5 p.m., Pl. 15 conference room C; closed meetings; Personnel Relations, x3521; Calverton: every Mon., 4-5 p.m., Headquarters Building; Great River: every Wed., 4-5 p.m., Pl. 43 conference room 3.

Coin Club: Wed., July 26, Pl. 25 vendor conference room: informal lunchtime meeting. Ken Hale, x3717.

Duplicate Bridge Club: every Thurs., 6 p.m., Pl. 30 cafe; open competition; guests welcome. S. Campbell, x3382/F. O'Lear, x5120.

Dance Club: every Wed., 5-8 p.m., Pl. 30 cafe, July 12 swing/July 19 social at Uncle Sam's; friends and relatives welcome. E. Murway/M. Brown, x3262.

Fencing Club: every Tues., after 4:30 p.m., Pl. 30 cafe; both beginners and experienced fencers; instruction and competition; GAC employees and dependents welcome. P. Chaladaris, x4331.

Flying Club: Fri., July 14, 5:00 p.m., Pl. 28 auditorium; regular monthly membership meeting; film presentation: "History of Flight," "Wright Brothers, Part 3." R. Reisch, x3286.

Hockey Club: Sun., July 16, 5:30-7:30 p.m.; Cantiague Park, Hicksville; competitive European style hockey; Art Gibson, x2468/8964.

Model Railroad Society: every Wed., 5:30-9:30, Model RR Bldg. (at Pl. 3 rr crossing); regular meeting; guests welcome. R. Muntz (115)6044.

Retiree Club: Wed., July 26; Met's Ball Game. H. Chalandra, x4130.

Tennis Club: 2nd Wed. of every month, 5 p.m., classrooms A and B, Pl. 5. P. Andrews, x7345.

obituaries

FRANK L. DUNN of B/P Warehouses, Plant 37, died June 9 at the age of 52. He had been with the company since 1956 and resided at 19 Penataquit Rd., Bayshore.

WILLIAM ROVERY of Maintenance, Plant 3, died June 11 at the age of 65. He had been with the company since 1967 and resided at 235 S. Ketcham Ave., Amityville.

JAMES GALLO of Plant Protection, Plant 18, died June 11 at the age of 55. He worked for Grumman since 1977 and resided at 415 Central Ave., Bethpage.

Personals

On behalf of my family and myself, I would like to thank all my friends and co-workers at Grumman for their kind expression of sympathy during the recent loss of my father. Pat Andresen

My family and I wish to thank all our friends at Grumman and Employee Services for their sympathy and kindness during the recent loss of my mother. Sal Bonfante and Family

I would like to express my appreciation to those who worked so hard to ensure the success of the Richard Cope Heart Picnic. Richard Cope

On behalf of ourselves and our family, we wish to express our thanks to all of our friends for their sympathy and kindness during the recent loss of our brother. James and Mario Gatto

My family and I wish to thank all our friends at Grumman and Employee Services for their kind expression of sympathy during the recent loss of my husband. Mrs. Ted Grandner

I wish to express my thanks to my friends, coworkers and Employee Services for their kindness during my recent hospitalization. Michael Keker

My family and I wish to thank all our friends at Grumman and Employee Services for their kind expression of sympathy during the recent loss of my father. Salvatore Migliore

On behalf of my family and myself, I would like to thank all my friends at Grumman and Employee Services for their kindness and generosity during my recent hospitalization. Penyamin Sohikian

what do you think?

A fireman. . .an astronaut. . .a movie star. Most little kids have big ideas about what they want to be when they grow up. When you were a youngster, what did you want to be? Did things turn out the way you planned? We recently asked Grummanites dining at McKay Field's picnic in the Park for their opinions. What do you think?

Joseph Marchesiello

I wanted to be a lawyer from the time I was a little kid. I had an uncle who was a lawyer and I found his work very interesting. We talked about it frequently, even when I was fairly young. When I went to school I majored in political science initially and then I enrolled in law school. At the same time I got married and I really didn't have the time or the money to further that career. So here I am doing accounting work for Grumman and I enjoy it very much.

Anne Johnsen

I had wanted to be an actress and I did graduate as the school actress in high school. It was fantastic for me back then; I just loved it. That was probably the closest I ever came to that goal. Then I got married, had four sons and came to Grumman. We did a lot of drama in our church group when my boys were small and I was always active in that. We started a drama club; we used to perform plays; and I was always in them. Acting is just a hobby with me now.

Olive Hadzor

The illusions of childhood have no place in the adult world. That's all there is to it. I think that there are phases we all go through in life. First, you go through the early stages of maybe wanting to be married and have children. Or maybe, by way of imitating an adult role model, you might want to be a nurse or something like that. I had wanted to be a nurse, for one thing. I had also thought of being an artist. But life is just not like that. Right now I'm a Systems Engineer. I had never thought of that as a child.

Fran Lyons

I had wanted to be a singer, a dancer and a teacher. I had the opportunity to dance and sing when I was young and now I have the chance to teach as well. During the war, I danced and sang in USO shows. My dancing helped me win three jitter-bug contests. After the war, I came to Grumman and I've been here 20 years now. I'm the section head of secretaries in engineering and I teach shorthand and secretarial workshops. I love it . . . I feel like I'm fulfilling some of my earlier dreams.

Douglas Sedgley

When I grew up I wanted to be a cartoonist for Walt Disney Studios. The closest I ever got to that was one time many years ago when I worked for a company in California that was about five miles away. Of course, it was in aerospace. Right now, I'm an engineer for the Energy System group. I think I'd still like to be a cartoonist, but I like what I'm doing now. I draw in my spare time still — not for profit, just as a hobby.

John Ricetti

I always wanted to travel and I had the chance to do that in the service. I had always wanted a decent job and I found that here at Grumman. I always wanted to be a flyer and I had that chance as well. During the war, I was in the service as a combat pilot in WW II. That was the thing I had always wanted to do. I don't fly anymore though, only as a passenger. I work now for the repair control center on the Iranian program. . .and I still have an avid interest in aircraft.

Red Kues

I guess I wanted to be a ballplayer. That's changed a little bit. I'm a mechanic now, but I did play with the semi-pros. I used to play in the legion team in Babylon. Then the war came along and Uncle Sam had other plans for me. I played in the service on the U.S. team; we played all over Europe. I played a lot of ball — high school teams, all-star teams and teams for the county besides. In the service we used to play a lot of medical teams. I don't play much now — I can't stoop that far anymore.

Ronald Knight

When I was a little boy I wanted to be a cowboy. . .a Hollywood cowboy too, and maybe a stunt man. I used to dress up in cowboy clothes all the time. In fact, that was one of my nicknames in high school — they used to call me "Cowboy" all the time. Right now I work in manufacturing. I guess that's a long way from being a cowboy but I like it. As I grew older I realized that I couldn't ever really be a cowboy so I decided that I might as well go to school and make something of myself. I wanted to be very rich, too. I've taken a few steps towards that end. I've come up with a couple of ideas for inventions over the years. I'm not rich yet, but I still like the Westerns.

Grumman guide for travellers

With vacations coming up, many Grummanites plan to motor to various parts of the country to see the sights. Some of the sights that can be seen by intrepid travelers are vintage Grumman planes on display in a number of museums in many states. Here's a listing, by state. Admission is free unless otherwise noted.

Alabama: U.S. Army Aviation Museum, Fort Rucker, Telephone 205 255-4507. Open every day. On display — Grumman Mohawk.

Space and Rocket Center, Tranquility Base, Huntsville, Telephone 205 837-3400. Open daily. Admission — adults $2; children 95¢. On display — the LM.

USS Alabama Battleship Commission, Mobile, Telephone 205 433-2703. Open daily. Admission — $2 adults; 50¢ children. The Hellcat and the Albatross.

Arizona: Pima County Air Museum, Tucson, Telephone 602 887-2379. Admission is by appointment only. The F-11A Tiger, the Albatross, and the F-9F Panther.

California: Planes of Fame, Chino, at Chino Airport. Admission is by appointment only. The Hellcat and the Tiger.

Travel Town, Griffith Park, Los Angeles, Telephone 213 662-5874. Open daily. The Panther.

Movieland of the Air, Santa Ana, Telephone 714 545-5021. Open daily. Admission — $1.70 adults; 50¢ children. The J2F amphibian Duck.

Connecticut: Bradley Air Museum, International Airport, Hebron, Telephone 202 623-8803. Open daily. Admission, $1 adults; 50¢ children. The Hellcat, Panther, the Albatross and the Avenger.

Washington, D.C.: National Air and Space Museum, Smithsonian Institute, Telephone 202 381-6591. Open daily. On display — The Hellcat, Bearcat, FF-1, Duck, Avenger and Panther, the LM and the Gulfhawk. These craft are on display at the main facility and at Silver Hill, Maryland.

Florida: South Florida Museum and Bishop Planetarium, Bradenton, Telephone 813 746-4131. Open Tuesday through Sunday. Admission $1 adults; 50¢ children. On display — the LM.

NASA Kennedy Space Center, Cape Canaveral, Telephone 305 867-2363. Open daily. Admission — $2.50 adults, 50¢ children. On display — the LM.

United States Naval Aviation Museum, Pensacola, Telephone 904 452-3543. Open Tuesday through Saturday. The Hellcat, Bearcat, Panther, FF-1, Albatross. Duck, Rigel, Tiger, and Avenger.

Illinois: Museum of Science and Industry, Lake Shore Drive, Chicago, Telephone 312 684-1414. Open daily. On display — the LM.

Victory Air Museum, Mundelein, Telephone 312 566-7114. Open daily. Admission — $1 adults; 25¢ children. On display — the Wildcat and the Hellcat.

Massachusetts: Museum of Science, Science Park, Boston, Telephone 617 723-2500. Open daily. Admission — $2 adults; $1 children. On display — the LM.

New Mexico: Wings of Yesterday, Santa Fe, Telephone 505 983-5021. Open daily. Admission — $2 adults; $1 children. The Wildcat.

Nebraska: Strategic Aerospace Museum, Bellevue, Telephone 402 477-8984. Open daily. The Albatross.

North Carolina: Museum of Life & Science, Durham, Telephone 919 477-0431. Open daily. The Tiger and the LM.

Ohio: United States Air Force Museum, Wright Patterson Air Force Base, Fairborn, Telephone 513 255-3284. Open daily. The Albatross.

Walter Soplata Collection, Newbury, Telephone 216 564-5326. Admission by appointment only. The Tiger and two Avengers.

Oregon: Oregon Museum of Science and Industry, Portland, Telephone 503 224-9500. Open daily. Admission — $1.50 adults; 75¢ children. The Albatross.

Pennsylvania: Colonial Flying Corps Museum, Toughkenamon. Open on weekends. Admission — 50¢ adults. The Wildcat.

South Carolina: Florence Air & Missile Museum, Florence Municipal Airport, Florence, Telephone 803 665-5118. Open daily. Admission — $1 adults; 50¢ children. The Albatross.

Texas: Confederate Air Force, Rebel Field, Harlingen, Telephone 512 425-1057. Open daily. Admission — $2 adults; $1 children. The Wildcat, Hellcat, Bearcat, Albatross and Avenger.

NASA Johnson Space Center, Houston, Telephone 713 483-4321. Open daily. The LM.

Flying Tiger Air Museum, Paris, Telephone 214 784-3613. Open daily. The Wildcat and the Panther.

History and Traditions Museum, Military Training Center, Lackland AFB, San Antonio, Telephone 512 536-3235. Open daily. The Albatross.

Virginia: U.S. Marine Corps Museum, Marine Corps Base, Quantico, Telephone 703 640-2425. Admission by appointment only. The Wildcat, Hellcat, two twin-engine Tigercats, the Bearcat, the Panther, the Tiger and the Goose.

Good times roll at Great River

After a hard day's work, hundreds of men and women recently gathered to party heartily at the annual Great River Operations picnic.

Host Bruno Caputo, Great River general manager, and his corps of volunteers proved once again that they really know how to throw a party. There was plenty of food, beer and entertainment for all.

While a vigorous game of volleyball took place in the far corner, many boogied to the sound of the disco band on the dance floor.

Among the guests from Bethpage attending the annual gathering were Grumman Aerospace Chairman and President George Skurla and Executive Vice President Ralph "Doc" Tripp.

Spreading the word

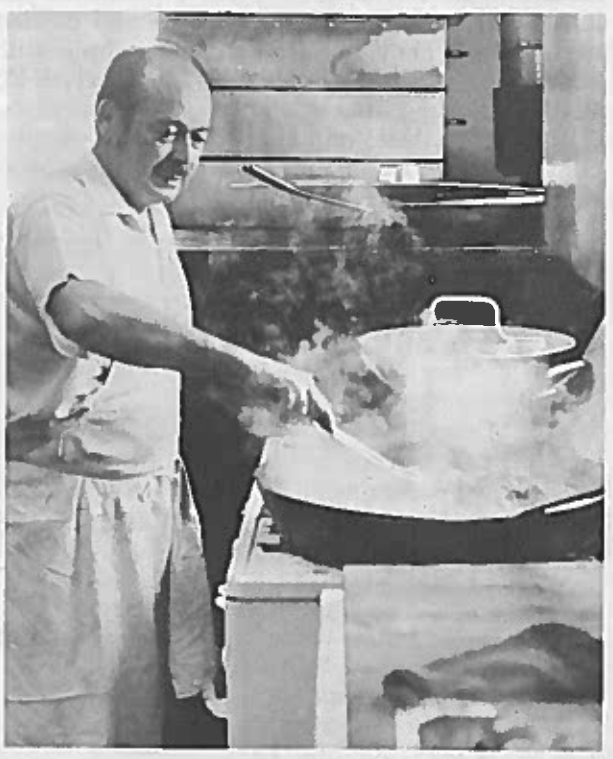
Almost 100 people gathered in the Plant 28 auditorium recently for a business meeting of the Equal Employment Opportunity (EEO) coordinators. They met to discuss EEO's progress and problems in recent months and other issues affecting Grummanites.

"Frequently, a person will approach his EEO representative with a problem before talking to a supervisor about it," says Ed Riley of the Opportunity Development Department and chief EEO coordinator.

"The topic can be anything from getting passed over for a promotion to the number of vacation days they're entitled to. It's important that our EEO reps know what Grumman's policies are on various personnel matters.

"Through meetings such as this one, we can keep our reps up to date on what's going on in Grumman. . .and also, what's going on in Washington that will affect the company's business," says Riley.

The meeting lasted about an hour and a half. On hand for the question and answer period were Tom Rozzi, Vice President-Security and Personnel Services; Jean Esquerre, co-director of Opportunity Development Department and a member of Grumman Aerospace board of directors; Harry Volz, deputy director of Security and Personnel Services; and Bob Foster, deputy director of Personnel.



Long drought ends for Preiser

Gus Preiser won the best-of-show prize in the 1978 Grumman Rose Show on Thursday, June 15. Gus, who grows 100 rose bushes along with some philodendrons and azaleas, captured his second best-of-show prize in 25 years of competition. His last best-of-show came 20 years ago.

Preiser, a production leadman in Plant 3's Honeycomb Department, won eight awards altogether. His "Red Lion" rose earned him a handsome redwood wheelbarrow which Pete Haring may liked to have borrowed to cart his prizes home. Haring won a total of 19 awards including a clean sweep in the miniature roses class. Preiser's honorable mention in class 5 kept Haring from sweeping a second category.

Awards were presented by Tom Rozzi, Vice President-Security & Personnel Services.

Many picked, few chosen

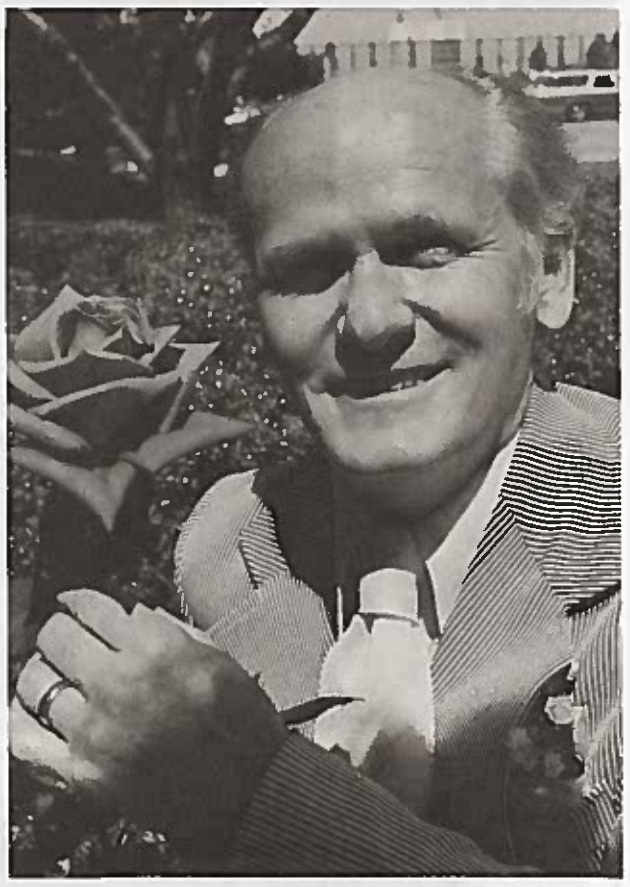
The rose show winners (first, second, third and honorable mention) are:

One bloom per stem — Class one: Gus Preiser, Preiser, Pete Haring and Ed Siebert. Class two: Haring, Preiser, Ann Dluginsky and Chuck Belensky. Class three: Charles Shattuck, Mike Gabriel and Haring (3rd & HM). Class four: Preiser, Haring, Preiser and Gabriel. Class five: Haring and Preiser (HM). Class six: Fran Purstell, Purstell, Eleanor Franzese and Robert Kramisen. Class seven: Haring, all four.

Sprays — Class eight: Joe Schaefer, Haring, Haring and Joan Blitzer. Class nine: Preiser, Joe Schaefer, Preiser and Schaefer. Class 10: Pete Haring, Haring and Schaefer.

Five - 10 stems of roses — Mike Gabriel, Pete Haring, Haring and Dot Kappenberg. *Seasonal Material* — Single Specimen: Peg Hilbert, Norma Rooney, Madelyn Condon and John Gatti. *Collections:* Dot Kappenberg, John Gatti, Lillian Fink and Norma Rooney. *Arrangements:* Karl Hagen, Fran Purstell, Kay Trestka and Dot Kappenberg.

Special awards: Madelyn Condon, Norma Rooney, Robert Kramisen, Pete Haring, Ray Muntz, Mike Gabriel, Donna Cullerton, Joe Schaefer, Marge Dolderen and Lillian Fink.



Best-of-show. *Gus Preiser shows-off his prize winning "Red Lion" rose at the Garden Forum's annual rose show. (Photo by Marie Trimborn)*

Gotcha!

We continually strive to supply a variety of articles to satisfy our readership's needs — and we welcome suggestions. In fact, we also cater to those who take joy in finding errors in a publication.

Not that we purposely slip in errors to keep these readers happy. Typographical errors can slip through. And some readers take delight in pointing them out to us.

For instance, in a recent "the way it was" feature, the softball team picture had a scoreboard posting the company's name as "Grumann." Several people wrote to us about this misspelling. In this instance, we plead innocent.

But in another issue of PLANE NEWS, we did spell "ecstasy" wrong. Naturally, such errors embarrass us. But we do take consolation in the following: someone figured out that 2,759,022 errors can be made by transposition alone in the simple phrase, "To be or not to be."

Openings in the field

Grumman Aerospace's Field Operations has immediate openings for jobs at land- and carrier-based sites. They are looking for people with experience in the following: F-14 VAST, E-2C VAST, or CAT-IIID.

If you're interested in applying for these jobs, contact Bud Robinette, Ext. 6585, or Mike Lenzo, Ext. 5878.

Summer show -- blooming success

Retiree Karl Hagen's oriental arrangement of Japanese Irises earned him best-of-show honors in the Grumman Garden Forum's Great River Summer show. It was Hagen's 10th best-of-show award in 27 years of competition.

The 1970 retiree from the Plant 3 Machine Shop says the proportion of the arrangement is of utmost importance. "Flowers, buds, leaves and stalks should be of varying sizes, and colors should be complementary and not clash."

The show was judged by Doctor and Mrs. Maynard Lemrow of the Suffolk Rose Society. Mrs. Lemrow mentioned how difficult it is to judge arrangements. "They are a one-time creation where you are trying to achieve the ultimate perfection of the arrangement at the precise time of judging. If the buds are open or close too much at the time of judging, a beautiful display becomes just another entry."

Margaret Mezzacapo directed the show and was assisted by Marie Bennett and Carmen Russo. Bruno Caputo, Great River Operations general manager, awarded prizes to the following Great River Summer Show winners (first, second, third and honorable mention):

Single rose: Roy Goddard, all four prizes. *Sprays:* Goddard, all three prizes. *Seasonal singles:* Goddard, Karl Hagen. *African violets:* Mildred Collins, Pat Francis, Joan Weinicke, and Richard Denault. *Cactus and Succulents:* Bella Maria Volpe, Carol Sidoiski, George McGinn, and Suzan Seaman. *General Houseplants:* Walter Steck, Steck, Harold Johnson, Goddard, Bill Meehan and Liz Heiter. *Arrangements:* Karl Hagen, Carmen Russo, Joe DeLaurentis, Russo and Jo Matters. *Terrariums:* Betty McLean.

GRUMMAN plane news

ADDRESS CORRECTION REQUESTED

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